Dipeptidyl peptidase-4 inhibitor use is not associated with elevated risk of severe joint pain in patients with type 2 diabetes: A population-based cohort study

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This is the first large longitudinal cohort study to investigate the putative association of severe joint pain (SJP) with dipeptidyl peptidase-4 inhibitor (DPP4i) use in patients with type 2 diabetes. The propensity score-matched population-based cohort study was performed between 2009 and 2013 in a group of type 2 diabetes patients with stable metformin use. In total, 4,743 type 2 diabetes patients used a DPP4i as the second-line antidiabetic drug (i.e., DPP4i users) and the same number of matched non-DPP4i users was selected. Two study groups were followed up until SJP diagnosis (international classification of diseases, ninth reversion, clinical modification code 719.4), health insurance policy termination, or the end of 2013. The incidence rate of SJP was estimated under the Poisson assumption. Multiple cox proportional hazard model was used to estimate the covariate-adjusted hazard ratio (HR) and 95% CI of SJP in association with DPP4i use. Over a maximum follow-up of five years, 679 DPP4i users and 767 non-DPP4i users were newly diagnosed with SJP, representing incidence rates of 47.20 and 50.66 per 1,000 person-years, respectively. Cox proportional hazard model indicated that DPP4i use slightly but non-significantly reduced the risk of SJP (adjusted HR: 0.92 [95% CI: 0.83–1.02]). Such null results were also observed among all age and sex stratifications and in a sensitivity analysis using all nonspecific arthropathies as the study endpoint. This study provides no support for the putative risk of SJP related to DPP4i use in type 2 diabetes patients during a maximum follow-up of five years.

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Heat exposures increase glucose uptake via GLUT-1 expression in mouse skeletal muscle

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Exercise is known as an important way to maintain the normal blood glucose. But many of diabetes mellitus (DM) patients cannot do the exercise well. Heating therapy is predicted as one of the best alternative for exercise supplement. On the other hand, when body get a stressor, GLUT-1 will be expressed. So, we want to know the relationship between lowering blood glucose by heating therapy method and GLUT-1 expression. Mice were divided into four different temperature treatment: 20°C, 27°C, 37°C and 40°C. Each group was consisted of seven mice. The mice were fasted for 16 hours then fasting blood sugar was measured. Then each mice was given glucose 0.2 gram and 30 minutes later blood sugar was re-measured. Then mice incorporated into the heating therapy box and were treated for 30 minutes. Gastrocnemius musculus of the mice was taken and then coloured by immunohistocimia and GLUT-1 antibody to measure the activity of GLUT-1. GLUT-1 expression was best in 40°C but worst in 37°C. Best result of glucose uptake in 37°C was caused by the effective expression of GLUT-4. In diabetic people, there is a disturbance of GLUT-4 expression. On the other hand, the expression of GLUT-1 is not related to insulin activity. So according to these research, in hipertermy condition (40°C), the expression of GLUT-1 will help the glucose uptake in people with disturbance in GLUT-4 expression.

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